Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER 2012

Subject code: 731603 **Date: 26/12/2012**

Subject Name: Polymer Structure & Property Prediction

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss the effect of Structure regularity, molecular stiffness and intermolecular attraction on Polymer properties.	**(07)**
	(b)	Establish the General Relationships between Chemical Composition and Polymer Properties.	**(07)**
Q.2	**(a)**	Describe in detail about Halogens element in Polymer.	**(07)**
	(b)	Explain the conversion of 100% Total Solids from Low to High Molecular Weight by giving examples of Thermosetting Resigns & Monomer Casting.	**(07)**
		OR	
	(b)	What do you mean by Mechanical Failure? How it may be observed in Polymeric materials? Discuss in detail.	**(07)**
Q.3	**(a)**	List the different structural factors which restrict the rotation of polymer molecule. Explain these factors in detail.	**(07)**
	(b)	Write in detail about effect of Polymer molecular flexibility on Thermal Properties.	**(07)**
		OR	
Q.3	**(a)**	"The fundamental flexibility of a generalized polymer molecule is most simply analyzed by basic concepts of mathematics and physics". Justify the statement.	**(07)**
	(b)	Discuss the effect of Molecular flexibility on Resistance & Dielectric Properties of Polymeric materials.	**(07)**
Q.4	**(a)**	Explain in detail about the Nature of Crystallinity in Polymers.	**(07)**
	(b)	"Kinetic Factors Affecting Rate and Extent of Crystallization". Justify the statement.	**(07)**
		OR	

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Q.4	**(a)**	Discuss the Relations between Orientation and Crystallization.	**(07)**
	(b)	How Orientation of Polymer molecules affect the Thermal & Electrical properties of Polymer? Describe in detail.	**(07)**
Q.5	**(a)**	Short note on ‘London Dispersion Forces’.	**(07)**
	(b)	How the Polarity affect the Adhesion of a Polymer? Write the Classification of Adhesives by Polarity.	**(07)**

OR

Q.5	**(a)**	How the Hydrogen Bonding form between Polymer Molecules? Explain in detail.	**(07)**
	(b)	Discuss about Ionic Bonding & Cross-Linking.	**(07)**

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